



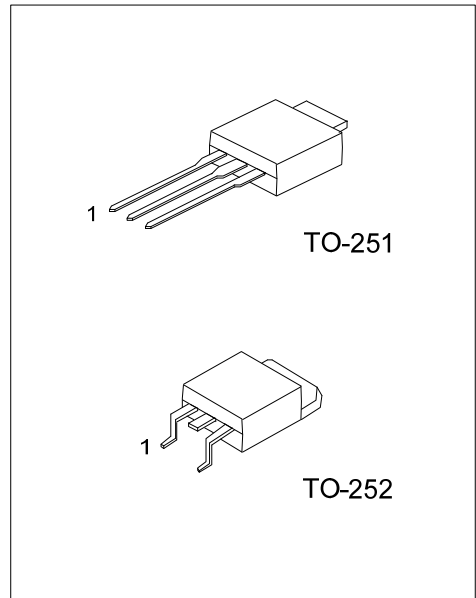
# 2SD1804

## NPN SILICON TRANSISTOR

### HIGH CURRENT SWITCHING APPLICATIONS

■ FEATURES

- \* Low collector-to-emitter saturation voltage
- \* High current and high  $f_T$
- \* Excellent linearity of  $h_{FE}$ .
- \* Fast switching time
- \* Small and slim package making it easy to make UTC **2SD1804** applied sets smaller.



Lead-free: 2SD1804L  
Halogen-free: 2SD1804G

■ ORDERING INFORMATION

Ordering Number			Package	Pin Assignment			Packing
Normal	Lead Free	Halogen Free		1	2	3	
2SD1804-x-TM3-T	2SD1804L-x-TM3-T	2SD1804G-x-TM3-T	TO-251	B	C	E	Tube
2SD1804-x-TN3-R	2SD1804L-x-TN3-R	2SD1804G-x-TN3-R	TO-252	B	C	E	Tape Reel

<p>2SD1804L-x-TM3-T</p>	<p>(1) R: Tape Reel, T: Tube</p> <p>(2) TM3: TO-251, TN3: TO-252</p> <p>(3) x: refer to Classification of <math>h_{FE1}</math></p> <p>(4) G: Halogen Free, L: Lead Free, Blank: Pb/Sn</p>
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■ ABSOLUTE MAXIMUM RATING (Ta=25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT	
Collector-Base Voltage	V <sub>CBO</sub>	60	V	
Collector-Emitter Voltage	V <sub>CEO</sub>	50	V	
Emitter-Base Voltage	V <sub>EBO</sub>	6	V	
Collector Dissipation	P <sub>D</sub>	Ta=25°C	1	W
		Tc=25°C	20	W
Collector Current	I <sub>C</sub>	8	A	
Collector Current(PULSE)	I <sub>C(PULSE)</sub>	12	A	
Junction Temperature	T <sub>J</sub>	+150	°C	
Storage Temperature	T <sub>STG</sub>	-55~+150	°C	

Note Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

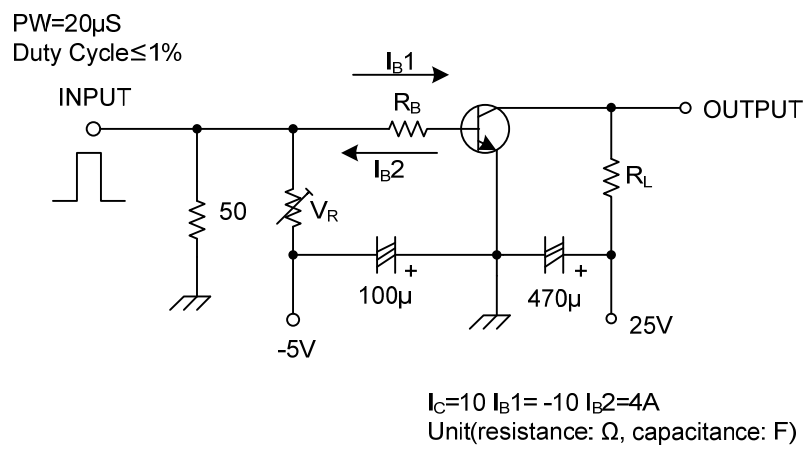
■ ELECTRICAL CHARACTERISTICS (Ta=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Base Breakdown Voltage	BV <sub>CBO</sub>	I <sub>C</sub> =10μA, I <sub>E</sub> =0	60			V
Collector-Emitter Breakdown Voltage	BV <sub>CEO</sub>	I <sub>C</sub> =1mA, R <sub>BE</sub> =∞	50			V
Emitter-Base Breakdown Voltage	BV <sub>EBO</sub>	I <sub>E</sub> =10μA, I <sub>C</sub> =0	6			V
Collector Cutoff Current	I <sub>CBO</sub>	V <sub>CB</sub> =40V, I <sub>E</sub> =0			1	μA
Emitter Cutoff Current	I <sub>EBO</sub>	V <sub>EB</sub> =4V, I <sub>C</sub> =0			1	μA
DC Current Gain	h <sub>FE1</sub>	V <sub>CE</sub> =2V, I <sub>C</sub> =0.5A	70		400	
	h <sub>FE2</sub>	V <sub>CE</sub> =2V, I <sub>C</sub> =6A	35			
Gain-Bandwidth Product	f <sub>T</sub>	V <sub>CE</sub> =5V, I <sub>C</sub> =1A		180		MHz
Output Capacitance	C <sub>ob</sub>	V <sub>CE</sub> =10V, f=1MHz		65		pF
Collector-Emitter Saturation Voltage	V <sub>CE(SAT)</sub>	I <sub>C</sub> =4A, I <sub>B</sub> =0.2A		200	400	mV
Base-Emitter Saturation Voltage	V <sub>BE(SAT)</sub>	I <sub>C</sub> =4A, I <sub>B</sub> =0.2A		0.95	1.3	V
Storage Time	t <sub>STG</sub>	See test circuit		500		ns
Fall Time	t <sub>F</sub>	See test circuit		20		ns

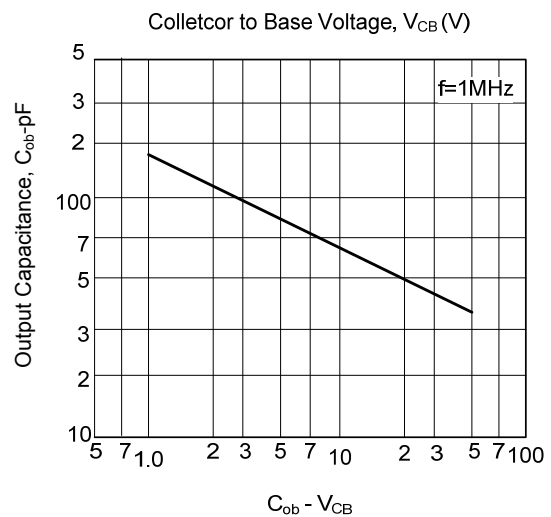
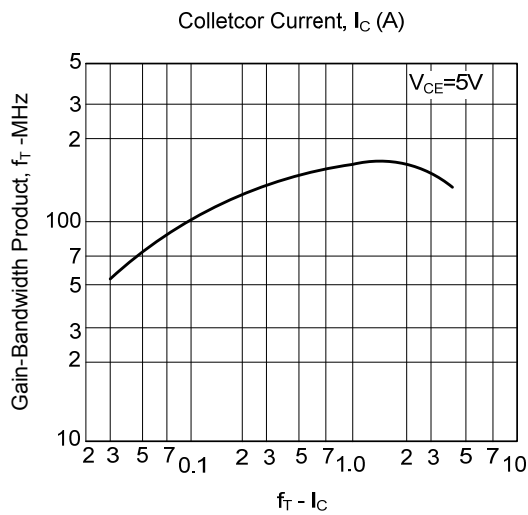
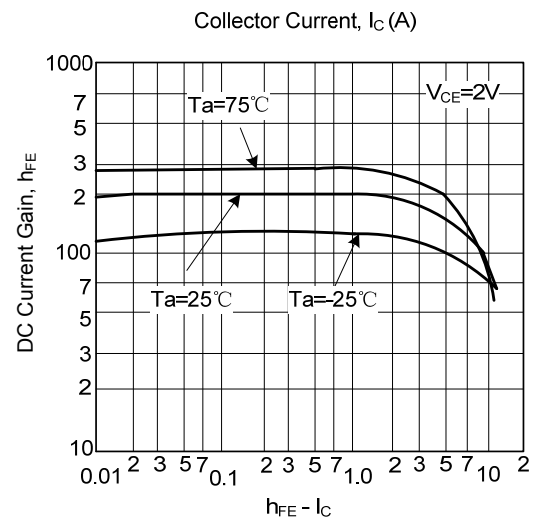
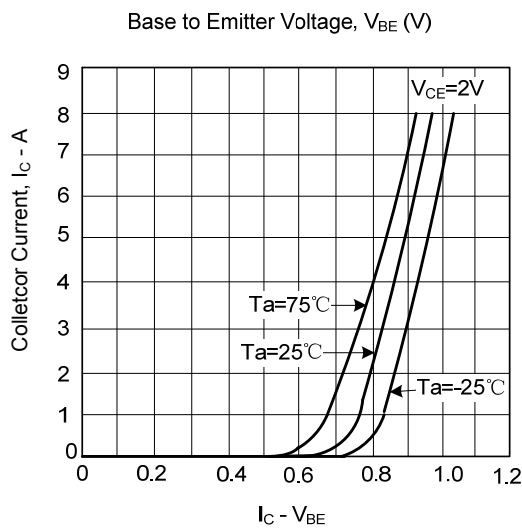
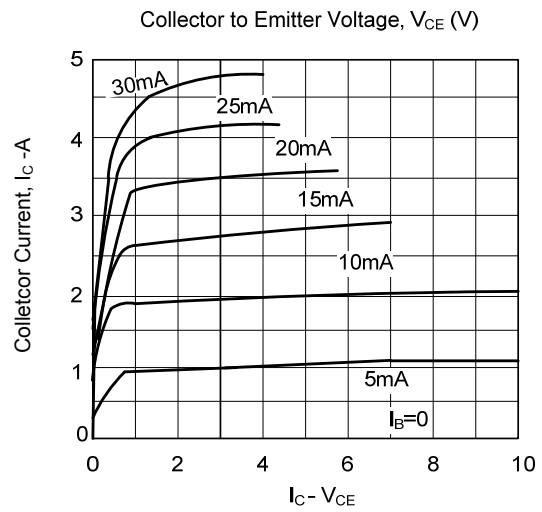
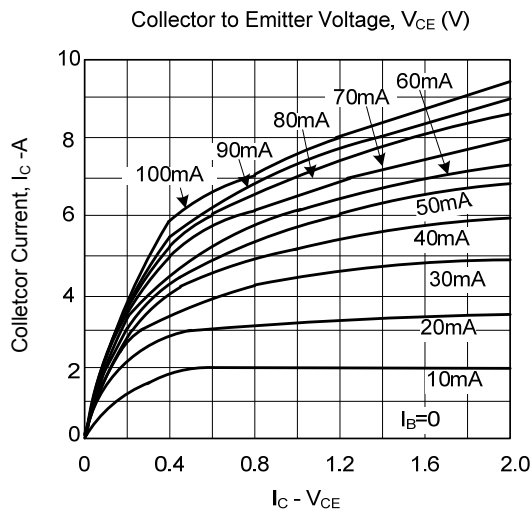
■ CLASSIFICATION OF h<sub>FE1</sub>

RANK	Q	R	S	T
RANGE	70-140	100-200	140-280	200-400

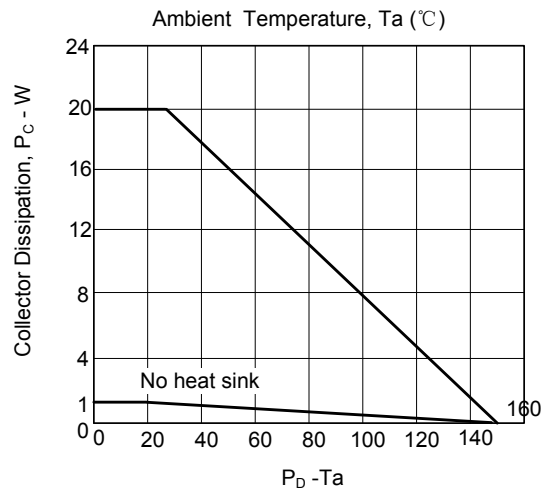
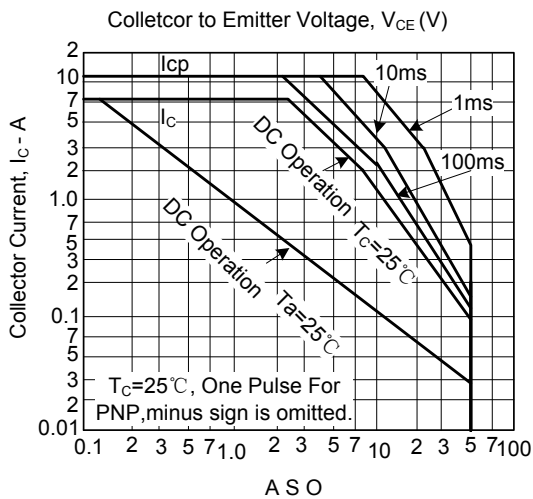
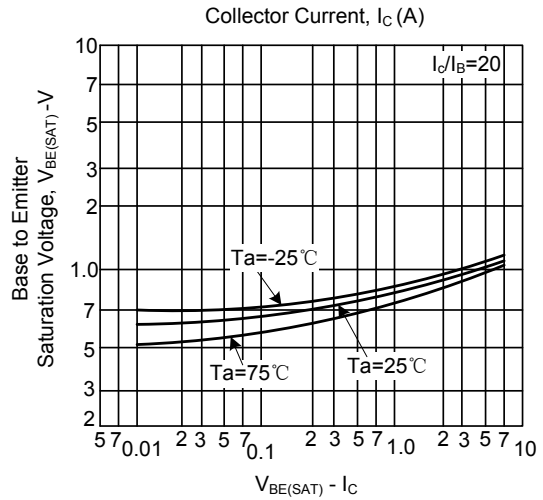
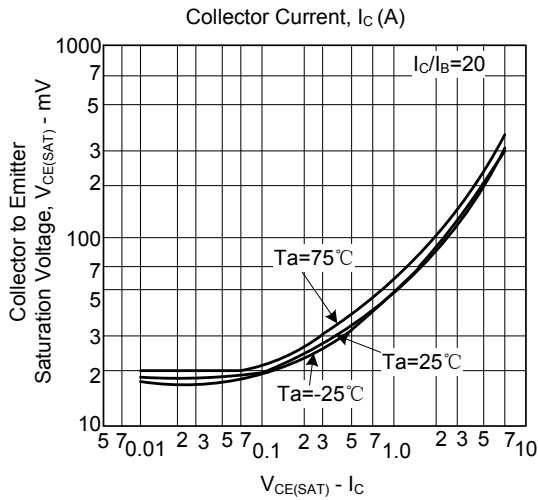
■ TEST CIRCUIT



## TYPICAL CHARACTERISTICS



## TYPICAL CHARACTERISTICS(Cont.)



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